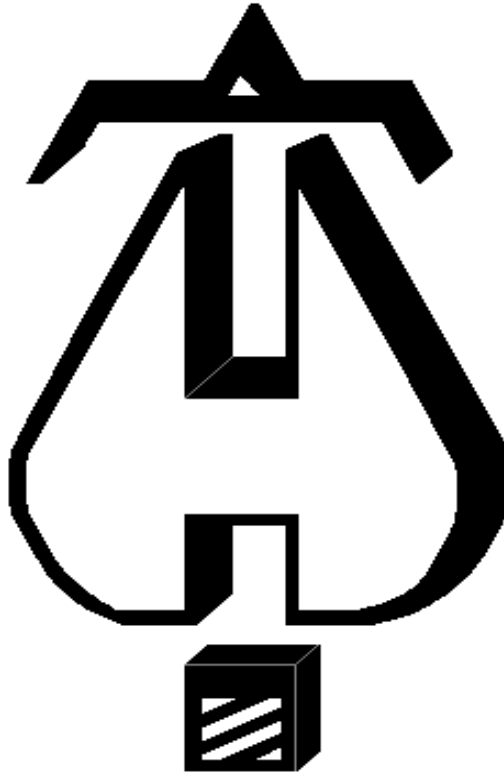




. . . Fire Protection by Computer Design

STAR FIRE SPRINKLERS, INC
686 EDGEWOOD AVE. N.
JACKSONVILLE, FL 32254
904 384-1066

Job Name : TEXAS ROADHOUSE LAKE CITY
Building : ATTIC
Location : 117 NW KNIGHTS AVE, LAKE CITY, FLORIDA
System : 1, WET
Contract :
Data File : TEXAS ROADHOUSE - AREA 1.WXF

Hydraulic Design Information Sheet

Name - TEXAS ROADHOUSE Date - 02/27/2020
Location - 117 NW KNIGHTS AVE, LAKE CITY, FLORIDA
Building - ATTIC System No. - 1, WET
Contractor - STAR FIRE SPRINKLER, INC. Contract No. -
Calculated By - Drawing No. - FP-2
Construction: () Combustible () Non-Combustible Ceiling Height - VARIES
Occupancy - RESTAURANT

S (X) NFPA 13 (X) Lt. Haz. Ord. Haz. Gp. () 1 () 2 () 3 () Ex. Haz.
Y () NFPA 231 () NFPA 231C () Figure Curve
S Other

T Specific Ruling Made By Date

E
M Area of Sprinkler Operation - 2500 System Type Sprinkler/Nozzle
Density - 0.10 (X) Wet Make VIKING
D Area Per Sprinkler - 100 () Dry Model UPRIGHT
E Elevation at Highest Outlet - 15' () Deluge Size 1/2"
S Hose Allowance - Inside - () Preaction K-Factor 5.6
I Rack Sprinkler Allowance - () Other Temp. Rat. 200
G Hose Allowance - Outside - 100
N

Note

Calculation Flow Required - 612.4 Press Required - 70.8 AT TEST
Summary C-Factor Used: 120 Overhead 140 Underground

W Water Flow Test: Pump Data: Tank or Reservoir:
A Date of Test - 02/20/2020 Cap. -
T Time of Test - 10:30 AM Rated Cap. - Elev. -
E Static Press - 85 @ Press -
R Residual Press - 65 Elev. - Well
Flow - 1340 Proof Flow
S Elevation - NA

U Location - NW KNIGHTS AVE & NW MEDICAL CENTER LN.

P
L Source of Information - STAR FIRE SPRINKLERS, INC.
Y

C Commodity Class Location
O Storage Ht. Area Aisle W.
M Storage Method: Solid Piled % Palletized % Rack
M
() Single Row () Conven. Pallet () Auto. Storage () Encap.
S R () Double Row () Slave Pallet () Solid Shelf () Non
T A () Mult. Row () Open Shelf
O C
R K Flue Spacing Clearance: Storage to Ceiling
A Longitudinal Transverse
G
E Horizontal Barriers Provided:

Water Supply Curve C

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

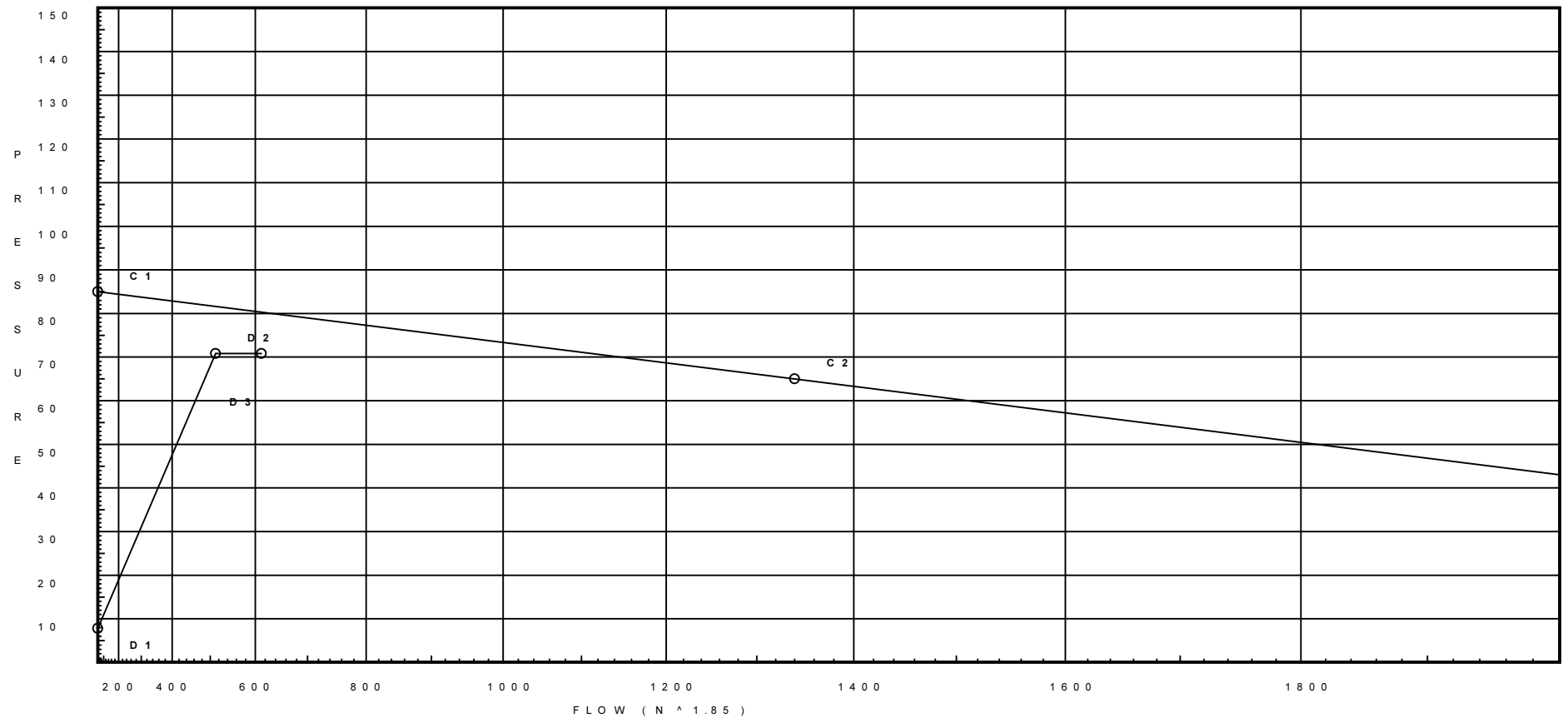
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City Water Supply:

C 1 - Static Pressure : 85
C 2 - Residual Pressure: 65
C 2 - Residual Flow : 1340

Demand:

D 1 - Elevation : 7.796
D 2 - System Flow : 512.465
D 2 - System Pressure : 70.840
Hose (Demand) : 100
D 3 - System Demand : 612.465
Safety Margin : 9.461



Fittings Used Summary

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

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Fitting Legend

Abbrev.	Name	½	¾	1	1 ¼	1 ½	2	2 ½	3	3 ½	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90° Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	NFPA 13 45° Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90° Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and C Factors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and C Factors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for C Factors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

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Node No.	Elevation	K-Fact	P t Actual	P n	Flow Actual	Density	Area	Press Req.
S 411	15.0	5.6	7.0	na	14.82	0.1	100	7.0
S 412	15.0	5.6	7.27	na	15.1	0.1	100	7.0
S 413	15.0	5.6	10.57	na	18.21	0.1	100	7.0
S 414	15.0	5.6	11.76	na	19.21	0.1	100	7.0
S 415	15.0	5.6	12.97	na	20.17	0.1	100	7.0
S 416	15.0	5.6	17.05	na	23.12	0.1	100	7.0
S 417	15.0	5.6	17.84	na	23.66	0.1	100	7.0
S 419	15.0	5.6	19.57	na	24.78	0.1	100	7.0
S 400	14.875	5.6	7.26	na	15.09	0.1	100	7.0
S 401	14.875	5.6	7.68	na	15.52	0.1	100	7.0
S 402	14.875	5.6	9.74	na	17.48	0.1	100	7.0
S 403	14.875	5.6	10.96	na	18.54	0.1	100	7.0
S 404	14.875	5.6	12.19	na	19.55	0.1	100	7.0
S 405	14.875	5.6	14.4	na	21.25	0.1	100	7.0
S 406	14.875	5.6	13.34	na	20.45	0.1	100	7.0
S 408	14.875	5.6	14.33	na	21.2	0.1	100	7.0
S 420	14.5	5.6	8.48	na	16.3	0.1	100	7.0
S 421	14.5	5.6	9.21	na	16.99	0.1	100	7.0
S 422	14.5	5.6	9.72	na	17.45	0.1	100	7.0
S 423	14.5	5.6	10.4	na	18.06	0.1	100	7.0
S 425	14.5	5.6	11.7	na	19.16	0.1	100	7.0
S 426	14.5	5.6	13.78	na	20.79	0.1	100	7.0
S 427	14.66	5.6	19.84	na	24.94	0.1	100	7.0
S 428	14.58	5.6	18.18	na	23.88	0.1	100	7.0
S 429	14.66	5.6	16.52	na	22.76	0.1	100	7.0
S 430	14.66	5.6	18.37	na	24.0	0.1	100	7.0
411	12.66		8.54	na				
412	12.66		9.34	na				
438	12.66		12.9	na				
413	12.66		13.01	na				
439	12.66		14.14	na				
414	12.66		14.34	na				
415	12.66		15.71	na				
440	12.66		17.07	na				
416	12.66		20.56	na				
417	12.66		20.1	na				
418	12.66		21.38	na				
419	12.66		23.33	na				
400	12.66		8.74	na				
401	12.66		9.43	na				
441	12.66		11.58	na				
402	12.66		11.69	na				
442	12.66		12.82	na				
403	12.66		13.02	na				
404	12.66		14.37	na				
405	12.66		16.78	na				
406	12.66		15.21	na				
408	12.66		16.7	na				
429	12.66		18.46	na				
431	12.66		21.54	na				
430	12.66		20.42	na				
427	12.66		22.56	na				
420	12.66		10.15	na				
421	12.66		10.95	na				
444	12.66		11.4	na				
422	12.66		11.51	na				
423	12.66		12.25	na				
445	12.66		13.53	na				
425	12.66		13.68	na				
426	12.66		15.96	na				
428	12.66		20.19	na				
437	12.66		20.52	na				

Flow Summary - Standard

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

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Node No.	Elevation	K-Fact	P t Actual	P n	Flow Actual	Density	Area	Press Req.
407	12.66		24.56	na				
433	12.66		24.63	na				
436	12.66		22.57	na				
446	12.66		22.65	na				
435	12.66		22.75	na				
434	12.66		22.93	na				
433A	12.66		25.27	na				
TW R	12.66		37.8	na				
BW R	1.0		59.87	na				
STUB	-3.0		61.72	na				
UG 1	-3.0		62.28	na				
UG 2	-3.0		69.92	na				
UG 3	-3.0		70.15	na				
TEST	-3.0		70.84	na	100.0			

The maximum velocity is 19.7 and it occurs in the pipe between nodes 433A and TW R

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TEXAS ROADHOUSE LAKE CITY

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Hyd. Ref. Point	Q a Q t	D i a . "C" P f/F t	F i t t i n g o r E q v . L n .	P i p e F t n g 's T o t a l	P t P e P f	P t P v P n	***** Notes *****
S 4 1 1 to 4 1 1	14.82 120.0 14.82	1.049 120.0 0.0747	1 E 2.0 0.0	5.000 2.000 7.000	7.000 1.013 0.523		K Factor = 5.60 Vel = 5.50
	0.0 14.82				8.536		K Factor = 5.07
S 4 1 2 to 4 1 2	15.10 120.0 15.1	1.049 120.0 0.0774	1 E 2.0 1 T 5.0 0.0	6.660 7.000 13.660	7.269 1.013 1.057		K Factor = 5.60 Vel = 5.61
	0.0 15.10				9.339		K Factor = 4.94
S 4 1 3 to 4 1 3	18.21 120.0 18.21	1.049 120.0 0.1094	1 E 2.0 1 T 5.0 0.0	6.000 7.000 13.000	10.575 1.013 1.422		K Factor = 5.60 Vel = 6.76
	0.0 18.21				13.010		K Factor = 5.05
S 4 1 4 to 4 1 4	19.21 120.0 19.21	1.049 120.0 0.1208	1 E 2.0 1 T 5.0 0.0	6.000 7.000 13.000	11.762 1.013 1.570		K Factor = 5.60 Vel = 7.13
	0.0 19.21				14.345		K Factor = 5.07
S 4 1 5 to 4 1 5	20.17 120.0 20.17	1.049 120.0 0.1322	1 E 2.0 1 T 5.0 0.0	6.000 7.000 13.000	12.974 1.013 1.719		K Factor = 5.60 Vel = 7.49
	0.0 20.17				15.706		K Factor = 5.09
S 4 1 6 to 4 1 6	23.12 120.0 23.12	1.049 120.0 0.1702	1 E 2.0 1 T 5.0 0.0	7.660 7.000 14.660	17.050 1.013 2.495		K Factor = 5.60 Vel = 8.58
	0.0 23.12				20.558		K Factor = 5.10
S 4 1 7 to 4 1 7	23.66 120.0 23.66	1.049 120.0 0.1776	1 E 2.0 0.0 0.0	5.000 2.000 7.000	17.845 1.013 1.243		K Factor = 5.60 Vel = 8.78
	0.0 23.66				20.101		K Factor = 5.28
S 4 1 9 to 4 1 9	24.78 120.0 24.78	1.049 120.0 0.1934	1 E 2.0 1 T 5.0 0.0	7.180 7.000 14.180	19.573 1.013 2.743		K Factor = 5.60 Vel = 9.20
	0.0 24.78				23.329		K Factor = 5.13
S 4 0 0 to 4 0 0	15.09 120.0 15.09	1.049 120.0 0.0773	1 E 2.0 0.0 0.0	4.750 2.000 6.750	7.256 0.959 0.522		K Factor = 5.60 Vel = 5.60
	0.0 15.09				8.737		K Factor = 5.11
S 4 0 1 to 4 0 1	15.52 120.0 15.52	1.049 120.0 0.0814	1 T 5.0 0.0 0.0	4.750 5.000 9.750	7.679 0.959 0.794		K Factor = 5.60 Vel = 5.76

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Hyd. Ref. Point	Q a Q t	D ia. "C" P f/F t	F itting or E q v.	L n.	P ipe F tng's Total	P t P e P f	P t P v P n	*****	Notes	*****
	0.0									
	15.52					9.432			K Factor = 5.05	
S 402	17.48	1.049	1 T	5.0	4.750	9.741			K Factor = 5.60	
to		120.0		0.0	5.000	0.959				
402	17.48	0.1014		0.0	9.750	0.989			Vel = 6.49	
	0.0									
	17.48					11.689			K Factor = 5.11	
S 403	18.54	1.049	1 T	5.0	4.750	10.959			K Factor = 5.60	
to		120.0		0.0	5.000	0.959				
403	18.54	0.1131		0.0	9.750	1.103			Vel = 6.88	
	0.0									
	18.54					13.021			K Factor = 5.14	
S 404	19.55	1.049	1 T	5.0	4.750	12.191			K Factor = 5.60	
to		120.0		0.0	5.000	0.959				
404	19.55	0.1249		0.0	9.750	1.218			Vel = 7.26	
	0.0									
	19.55					14.368			K Factor = 5.16	
S 405	21.25	1.049	1 T	5.0	4.750	14.398			K Factor = 5.60	
to		120.0		0.0	5.000	0.959				
405	21.25	0.1456		0.0	9.750	1.420			Vel = 7.89	
	0.0									
	21.25					16.777			K Factor = 5.19	
S 406	20.45	1.049	1 E	2.0	4.750	13.335			K Factor = 5.60	
to		120.0		0.0	2.000	0.959				
406	20.45	0.1357		0.0	6.750	0.916			Vel = 7.59	
	0.0									
	20.45					15.210			K Factor = 5.24	
S 408	21.20	1.049	1 T	5.0	4.750	14.329			K Factor = 5.60	
to		120.0		0.0	5.000	0.959				
408	21.2	0.1449		0.0	9.750	1.413			Vel = 7.87	
	0.0									
	21.20					16.701			K Factor = 5.19	
S 420	16.30	1.049	1 T	5.0	4.850	8.475			K Factor = 5.60	
to		120.0		0.0	5.000	0.797				
420	16.3	0.0891		0.0	9.850	0.878			Vel = 6.05	
	0.0									
	16.30					10.150			K Factor = 5.12	
S 421	16.99	1.049	1 T	5.0	4.850	9.208			K Factor = 5.60	
to		120.0		0.0	5.000	0.797				
421	16.99	0.0962		0.0	9.850	0.948			Vel = 6.31	
	0.0									
	16.99					10.953			K Factor = 5.13	
S 422	17.45	1.049	1 T	5.0	4.850	9.715			K Factor = 5.60	
to		120.0		0.0	5.000	0.797				
422	17.45	0.1011		0.0	9.850	0.996			Vel = 6.48	
	0.0									
	17.45					11.508			K Factor = 5.14	

Hyd. Ref. Point	Q a Q t	D i a . "C" P f/F t	F i t t i n g o r E q v . L n .	P i p e F t n g 's T o t a l	P t P e P f	P t P v P n	***** Notes *****
S 4 2 3 to 4 2 3	18.06 18.06	1.049 120.0 0.1077	1 T 0.0 0.0	4.850 5.000 9.850	10.397 0.797 1.061		K Factor = 5.60 Vel = 6.70
	0.0 18.06				12.255		K Factor = 5.16
S 4 2 5 to 4 2 5	19.16 19.16	1.049 120.0 0.1201	1 T 0.0 0.0	4.850 5.000 9.850	11.704 0.797 1.183		K Factor = 5.60 Vel = 7.11
	0.0 19.16				13.684		K Factor = 5.18
S 4 2 6 to 4 2 6	20.79 20.79	1.049 120.0 0.1398	1 T 0.0 0.0	4.850 5.000 9.850	13.783 0.797 1.377		K Factor = 5.60 Vel = 7.72
	0.0 20.79				15.957		K Factor = 5.20
S 4 2 7 to 4 2 7	24.94 24.94	1.049 120.0 0.1958	1 T 0.0 0.0	4.500 5.000 9.500	19.839 0.866 1.860		K Factor = 5.60 Vel = 9.26
	0.0 24.94				22.565		K Factor = 5.25
S 4 2 8 to 4 2 8	23.88 23.88	1.049 120.0 0.1806	1 E 0.0 0.0	4.500 2.000 6.500	18.184 0.832 1.174		K Factor = 5.60 Vel = 8.86
	0.0 23.88				20.190		K Factor = 5.31
S 4 2 9 to 4 2 9	22.76 22.76	1.049 120.0 0.1654	1 E 0.0 0.0	4.500 2.000 6.500	16.523 0.866 1.075		K Factor = 5.60 Vel = 8.45
	0.0 22.76				18.464		K Factor = 5.30
S 4 3 0 to 4 3 0	24.00 24.00	1.049 120.0 0.1825	1 E 0.0 0.0	4.500 2.000 6.500	18.365 0.866 1.186		K Factor = 5.60 Vel = 8.91
	0.0 24.00				20.417		K Factor = 5.31
4 1 1 to 4 1 2	14.82 14.82	1.049 120.0 0.0747	0.0 0.0 0.0	10.750 0.0 10.750	8.536 0.0 0.803		Vel = 5.50
4 1 2 to 4 3 8	15.09 29.91	1.049 120.0 0.2741	0.0 0.0 0.0	13.000 0.0 13.000	9.339 0.0 3.563		Vel = 11.10
4 3 8 to 4 1 3	0.0 29.91	1.38 120.0 0.0720	0.0 0.0 0.0	1.500 0.0 1.500	12.902 0.0 0.108		Vel = 6.42
4 1 3 to 4 3 9	18.22 48.13	1.38 120.0 0.1738	0.0 0.0 0.0	6.500 0.0 6.500	13.010 0.0 1.130		Vel = 10.32

STAR FIRE SPRINKLERS, INC
TEXAS ROADHOUSE LAKE CITY

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Hyd. Ref. Point	Q a Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	P t Pe Pf	P t Pv Pn	***** Notes *****
439 to 414	0.0 48.13	1.61 120.0 0.0820	0.0 0.0	2.500 0.0	14.140 0.0		Vel = 7.58
414 to 415	19.20 67.33	1.61 120.0 0.1526	0.0 0.0	8.920 0.0	14.345 0.0		Vel = 10.61
415 to 440	20.17 87.5	1.61 120.0 0.2478	0.0 0.0	5.500 0.0	15.706 0.0		Vel = 13.79
440 to 416	0.0 87.5	1.61 120.0 0.2478	2 E 8.0 0.0	6.080 8.000	17.069 0.0		Vel = 13.79
416 to 433	23.12 110.62	1.61 120.0 0.3825	1 T 8.0 0.0	2.660 8.000	20.558 0.0		Vel = 17.43
	0.0 110.62				24.635		K Factor = 22.29
417 to 418	23.66 23.66	1.049 120.0 0.1776	1 T 5.0 0.0	2.180 5.000	20.101 0.0		Vel = 8.78
418 to 419	0.0 23.66	1.049 120.0 0.1775	0.0 0.0	11.000 0.0	21.376 0.0		Vel = 8.78
419 to 407	24.77 48.43	1.38 120.0 0.1757	1 T 6.0 0.0	1.000 6.000	23.329 0.0		Vel = 10.39
	0.0 48.43				24.559		K Factor = 9.77
400 to 401	15.09 15.09	1.049 120.0 0.0772	0.0 0.0	9.000 0.0	8.737 0.0		Vel = 5.60
401 to 441	15.51 30.6	1.049 120.0 0.2859	0.0 0.0	7.500 0.0	9.432 0.0		Vel = 11.36
441 to 402	0.0 30.6	1.38 120.0 0.0753	0.0 0.0	1.500 0.0	11.576 0.0		Vel = 6.56
402 to 442	17.48 48.08	1.38 120.0 0.1734	0.0 0.0	6.500 0.0	11.689 0.0		Vel = 10.31
442 to 403	0.0 48.08	1.61 120.0 0.0820	0.0 0.0	2.500 0.0	12.816 0.0		Vel = 7.58
403 to 404	18.54 66.62	1.61 120.0 0.1497	0.0 0.0	9.000 0.0	13.021 0.0		Vel = 10.50
404 to 405	19.55 86.17	1.61 120.0 0.2409	0.0 0.0	10.000 0.0	14.368 0.0		Vel = 13.58

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TEXAS ROADHOUSE LAKE CITY

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Hyd. Ref. Point	Q a Q t	D ia. "C" P f/F t	F itting or E q v. L n.	P ipe F tng's Total	P t P e P f	P t P v P n	***** Notes *****
405 to 434	21.25 107.42	1.61 0.3622	1 T 0.0	8.0 8.000	9.000 0.0	16.777 0.0	Vel = 16.93
	0.0 107.42					22.934	K Factor = 22.43
406 to 408	20.45 20.45	1.049 0.1355	0.0 0.0	11.000 0.0	15.210 0.0	1.491	Vel = 7.59
408 to 434	21.20 41.65	1.049 0.5055	1 T 0.0	5.0 5.000	7.330 0.0	16.701 0.0	Vel = 15.46
	0.0 41.65					22.934	K Factor = 8.70
429 to 431	22.76 22.76	1.049 0.1653	1 E 1 T	2.0 5.0	11.580 7.000	18.464 0.0	Vel = 8.45
431 to 435	0.0 22.76	1.049 0.1653	1 T 0.0	5.0 5.000	2.330 0.0	21.536 0.0	Vel = 8.45
	0.0 22.76					22.748	K Factor = 4.77
430 to 446	24.00 24.0	1.049 0.1823	1 T 0.0	5.0 5.000	7.250 0.0	20.417 0.0	Vel = 8.91
	0.0 24.00					22.650	K Factor = 5.04
427 to 446	24.94 24.94	1.61 0.0243	0.0 0.0	3.500 0.0	22.565 0.0	0.085	Vel = 3.93
	0.0 24.94					22.650	K Factor = 5.24
420 to 421	16.30 16.3	1.049 0.0892	0.0 0.0	9.000 0.0	10.150 0.0	0.803	Vel = 6.05
421 to 444	17.00 33.3	1.38 0.0661	0.0 0.0	6.750 0.0	10.953 0.0	0.446	Vel = 7.14
444 to 422	0.0 33.3	1.38 0.0872	0.0 0.0	1.250 0.0	11.399 0.0	0.109	Vel = 7.14
422 to 423	17.45 50.75	1.61 0.0905	0.0 0.0	8.250 0.0	11.508 0.0	0.747	Vel = 8.00
423 to 445	18.06 68.81	1.61 0.1589	0.0 0.0	8.000 0.0	12.255 0.0	1.271	Vel = 10.84
445 to 425	0.0 68.81	1.61 0.1580	0.0 0.0	1.000 0.0	13.526 0.0	0.158	Vel = 10.84

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Hyd. Ref. Point	Q a Q t	D ia. "C" P f/F t	F itting or E q v . L n .	P ipe F t n g 's T o t a l	P t P e P f	P t P v P n	***** Notes *****
425 to 426	19.15 87.96	1.61 120.0 0.2503	0.0 0.0	9.080 0.0	13.684 0.0		Vel = 13.86
426 to 436	20.80 108.76	1.61 120.0 0.3705	1 T 8.0 0.0	9.850 8.000	15.957 0.0		Vel = 17.14
	0.0 108.76				22.571		K Factor = 22.89
428 to 437	23.88 23.88	1.049 120.0 0.1805	0.0 0.0	1.850 0.0	20.190 0.0		Vel = 8.86
437 to 436	0.0 23.88	1.049 120.0 0.1807	1 T 5.0 0.0	6.330 5.000	20.524 0.0		Vel = 8.86
	0.0 23.88				22.571		K Factor = 5.03
407 to 433	48.43 48.43	3.26 120.0 0.0027	2 E 18.815 0.0	9.580 18.815	24.559 0.0		Vel = 1.86
433 to 433 A	110.63 159.06	3.26 120.0 0.0241	1 T 20.159 0.0	6.330 20.159	24.635 0.0		Vel = 6.11
	0.0 159.06				25.273		K Factor = 31.64
436 to 446	132.64 132.64	3.26 120.0 0.0172	0.0 0.0	4.580 0.0	22.571 0.0		Vel = 5.10
446 to 435	48.94 181.58	3.26 120.0 0.0308	0.0 0.0	3.180 0.0	22.650 0.0		Vel = 6.98
435 to 434	22.76 204.34	3.26 120.0 0.0384	0.0 0.0	4.850 0.0	22.748 0.0		Vel = 7.85
434 to 433 A	149.07 353.41	3.26 120.0 0.1056	1 T 20.159 0.0	2.000 20.159	22.934 0.0		Vel = 13.58
433 A to T W R	159.05 512.46	3.26 120.0 0.2100	2 E 18.815 0.0	40.850 18.815	25.273 0.0		Vel = 19.70
T W R to B W R	0.0 512.46	3.26 120.0 0.2100	1 T 20.159 1 B 13.44 1 S 21.503 1 F s p 0.0	11.660 55.102 66.762	37.801 8.050		* * Fixed Loss = 3 Vel = 19.70
B W R to S T U B	0.0 512.46	4.26 120.0 0.0570	0.0 0.0	2.000 0.0	59.870 1.732		Vel = 11.54
S T U B to U G 1	0.0 512.46	6.16 140.0 0.0071	2 E 40.168 0.0	39.000 40.168	61.716 0.0		Vel = 5.52

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Hyd.	Q a	D ia.	F itting	P ipe	P t	P t			
Ref.		"C "	o r	F tng 's	P e	P v	*****	Notes	*****
P oint	Q t	P f/F t	E qv. L n.	T ota l	P f	P n			
U G 1	0.0	8.27	1 T	55.354	303.000	62.280			
to		140.0	1 F	14.234	75.914	7.000		* * Fixed Loss = 7	
U G 2	512.46	0.0017	1 G	6.326	378.914	0.642		Vel = 3.06	
U G 2	0.0	10.28	1 T	75.336	300.000	69.922			
to		140.0	1 G	7.534	82.870	0.0			
U G 3	512.46	0.0006		0.0	382.870	0.225		Vel = 1.98	
U G 3	0.0	6.16	1 T	43.037	50.000	70.147			
to		140.0	1 G	4.304	47.341	0.0			
T E S T	512.46	0.0071		0.0	97.341	0.693		Vel = 5.52	
	100.00							Q a = 100.00	
	612.46					70.840		K Factor = 72.77	